

## NEW DESCRIPTIONS

of pronotum about twice its median length (3.5:1.5 mm); scutellum well developed, twice as long as wide, reaching just before apex of abdomen; evaporatoria tuberculated. Heme-lytra (fig. C) with corium sparsely punctate, more than one and a half times the length of membrane. Legs dark brown.

*Abdomen:* Dark brown except venter medially with a broad dark patch; distinctly longer than wide (3.9:3.3 mm); venter un-sulcated and unarmed at base; last tergum (fig. G) in female with anterior and posterior margins slightly convex; external plates of female genitalia (fig. D) with 1st gonocoxae and 8th paratergites triangular, 9th paratergites oblong, much longer than wide; spermathecal bulb (fig. F) with a single protuberance.

*Body length:* 6.6 mm.

*Holotype:* ♀, INDIA, Uttar Pradesh, Aligarh, University Campus, on grass, 18.3.1979 (*M. Nayyar Azim*).

*Paratypes:* 2 ♀ (Same data as for holotype).

***Stortheconis obtusiceps* sp. nov.** (Figs. H-J)

### FEMALE

Resembles *S. aligarhensis* sp. nov. except in

the following characters:

Antennae (fig. I) with third segment slightly shorter than fourth (0.48:0.51 mm); pronotum (fig. H) with anterior margin slightly concave, near each anterior angle with small spine truncated apically, not extending beyond the level of eyes; spermathecal bulb (fig. J) with two protuberances.

*Body length:* 6.5 mm.

*Holotype:* ♀, INDIA, Uttar Pradesh, Aligarh, University Agricultural farm, 10.8.1979 (*M. Nayyar Azim*).

*Paratypes:* 2 ♀ (Same data as for holotype).

### ACKNOWLEDGEMENTS

We are deeply indebted to Prof. S. Mashood Alam, Head, Department of Zoology, Aligarh Muslim University, Aligarh for providing research facilities. Thanks are also due to Prof. Nawab H. Khan for encouragement. One of us (M.N.A.) is thankful to U.G.C. New Delhi for financial assistance during the tenure of this work.

## A NEW SPECIES OF THE GENUS *SYNIDOTEA* HARGER FROM WALT AIR COAST, INDIA (CRUSTACEA: ISOPODA: VALVIFERA)<sup>1</sup>

C. JALAJA KUMARI AND K. SHYAMASUNDARI<sup>2</sup>

(With twelve text-figures)

A new species of the genus *Synidotea* Harger, belonging to family Idoteidae is described. *Synidotea hanumantharaoi* sp. nov. is compared with *S. harfordi* Benedict, 1897, *S. variegata* Pillai, 1954, *S. worliensis* Joshi & Bal, 1959 and *S. fluviatilis* Pillai, 1963. Three male specimens were collected from the algal mass along the rocky intertidal region of Gangavaram, Waltair.

<sup>1</sup> Accepted July 1982.

<sup>2</sup> Department of Zoology, Andhra University, Waltair-530 003.

The isopods of the genus *Synidotea* are little known in India. Collinge (1917), Chilton (1924), Pillai (1954) and Joshi & Bal (1959)

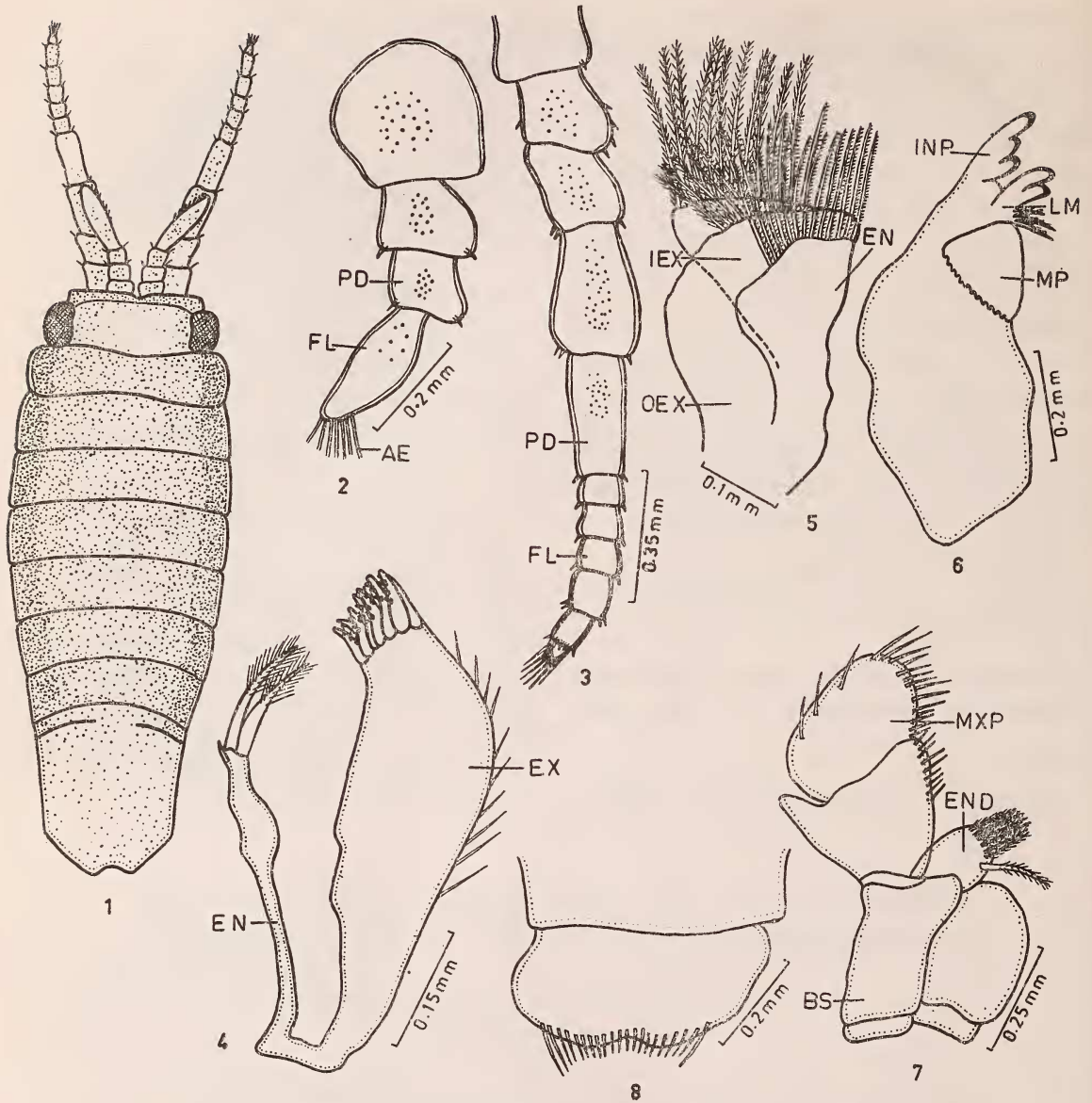


Fig. 1. *Synidotea hanumantharaoi* sp. nov.; Fig. 2. Antennule; Fig. 3. Antenna; Fig. 4. Maxillule; Fig. 5. Maxilla; Fig. 6. Mandible; Fig. 7. Maxilliped; Fig. 8. Epignath.

Abbreviations:

AE — Aesthetascs; BS — Basis; EN — Endopod; END — Endite; EX — Exopod; FL — Flagellum; IEX — Inner lobe of exopod; INP — Incisor process; LM — Lacinia mobilis; MP — Molar process; MXP — Maxillipedal palp; OEX — Outer lobe of exopod; PD — Peduncle.

reported *Synidotea variegata* from Gulf of Mannar, Chilka Lake, Kerala and Bombay coasts respectively. Pillai (1954) described *Synidotea fluviatilis* from Quilon and Cochin. Joshi & Bal (1959) reported *Synidotea worlensis* from Bombay. This is the fourth species of this genus from India.

***Synidotea hanumantharaoi*** sp. nov. (Figs. 1-12)

*Male*: Length 10 mm; Breadth 2 mm.

*Colour*: Dark greenish brown coloured body with little yellow tinge on the pleon region.

Body elongate-oval, nearly three times longer than wide, moderately flattened, dorsal surface smooth, lacking tubercles or rugae. Cephalon thrice as wide as long; frontal margin transverse, with a small median emargination or notch. Mid-dorsal portion of cephalon semi-circular. Eyes very large, oval and situated at extreme lateral edges of cephalon.

Antennule small, with three peduncular articles. Peduncular article 1 stout, with round base. Articles 2, 3 short and sub-equal. Antennular flagellum uniarticulate, stout, elongate-oblong, apically bears seven aesthetascs. Antennule extends to fourth peduncular article of antenna.

Antenna with 5 peduncular articles; article 1 short, articles 2, 3 subequal, article 4 stout, article 5 long and slender. Antennal flagellum 6-articulate, all articles bear simple setae. Terminal flagellar article possesses a bunch of setae.

Maxillule with 8 denticulate, stout, curved spines on exopod; 2 long, plumose setae and a small setule on endopod. Maxilla tri-lobate, endopod heavily setose, with 13 comb setae; inner lobe of exopod with 3 plumose setae and 8 comb setae; outer lobe of exopod with 11 plumose setae. Mandible with 3-cusped incisor process; robust and serrated molar process; lacinia mobilis of 2 cusps and three spines. Maxillipedal palp of 3 articles; distal 2 articles

with simple setae; endite with 1 coupling hook and 6 plumose setae along terminal margin. Epignath as wide as long projecting over the mandibles, posterior margin with median concavity, covered with setae.

Pereon roughly 2-2½ times longer than pleon; pereonite 1 dumbbell shaped, with rounded lateral margins; border of pereonites 2-7 truncate. Pereonite 7 narrowest and shortest; pereonites 2-5 subequal; pereonites 1 and 6 subequal. Mid-dorsal line of pereonites 1-4 possess crescentic arcuate depressions. Coxae of pereonites 1-7 not formed on dorsal side.

Pereopods 1-7 gradually increase in length posteriorly, ambulatory. Pereopod 1 stout, with comb setae on inner surface of flat carpus, a strong hook like dactylus and heavy setation on ventral margin. Pereopods 2-7 subsimilar without comb setae, with weak setation on ventral margin.

Pleon composed of a single segment, with a pair of partial antero-lateral setules. Pleotelson about one third length of pereon, postero-lateral margins angular. Apex of pleotelson medially concave. Uropod uniramous, distally truncate, medial margins covered by setae, inner distal angle of peduncle with three, large, plumose setae. Pleopods 1-5 elongate oval and distally rounded. Endopod of pleopods 1-5 with naked margins and exopod with plumose setae on outer margin. Appendix masculina of pleopod 2 arises from basis, extends beyond tip of rami and terminally obtuse.

*Material studied:*

Three male specimens were collected from algal mass along the rocky intertidal region of Gangavaram, Waltair. Holotype male 1 and paratypes male 2 are lodged in the Department of Zoology, Andhra University, Waltair. They will be deposited in the collections of the Zoological Survey of India, Calcutta.

DISCUSSION

The present species resembles *Synidotea variegata* Pillai, 1954 in body form, arcuate depressions on pereonites, structure of maxi-

llule, maxilliped and uropods, but differs in possessing short, stout antennule with 7 aesthetascs; short, stout antennae with 6 flagellar articles and truncate distal margin of uropod. It also resembles *Synidotea harfordi* Benedict,

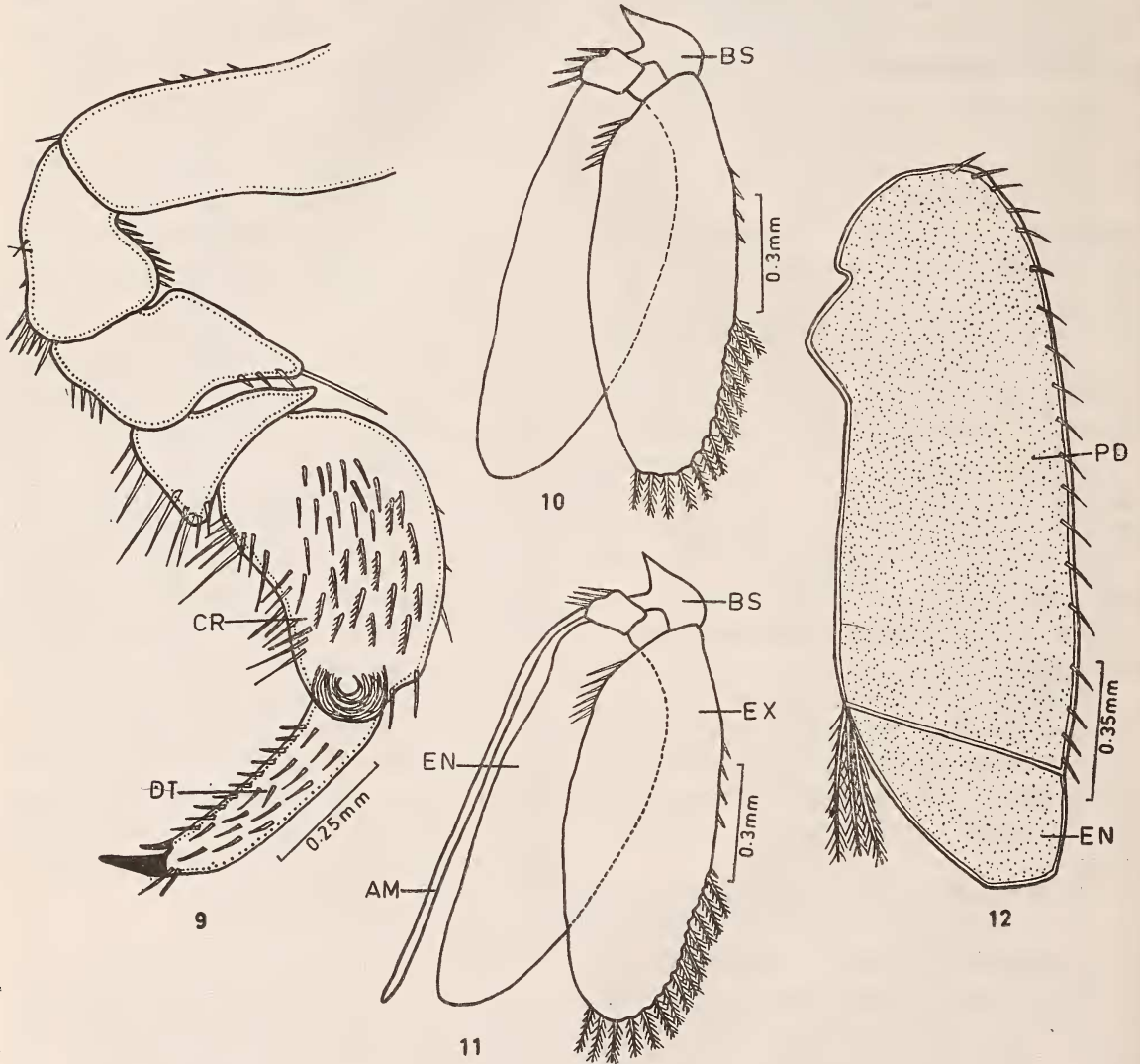


Fig. 9. Pereopod 1; Fig. 10. Pleopod 1; Fig. 11. Pleopod 2; Fig. 12. Uropod.

Abbreviations:

AM — Aesthetascs; BS — Basis; CR — Carpus; DT — Ductylus; EN — Endopod; EX — Exopod; PD — Peduncle.

NEW DESCRIPTIONS

1897 in general shape. In *S. hanumantharaoi* the flagellum of antenna is composed of 6 articles; whereas in *S. harfordi* antennular flagellum consists of 31 articles. The present form shows some resemblances to *S. fluvialtilis* Pillai, 1963 in the structure of maxillule, maxilla and distally truncated uropod, but can be easily separated by its differently shaped antennule, antenna and telson.

The present species also resembles *S. worliensis* Joshi & Bal, 1959 in the shape of maxilla, maxilliped and presence of arcuate depressions on pereon, but differs from it in the structure of antennular flagellum, uropods and telson, and thereby differs from all other species,

especially in the structure of antennule, antenna, maxillule, maxilla and shape and size of the cephalon, pereon and pleon.

The species is named in honour of Prof. K. Hanumantha Rao, Department of Zoology, Andhra University, Waltair, India.

ACKNOWLEDGEMENTS

We are thankful to Prof. K. Hanumantha Rao for critically going through the manuscript. One of us (CJK) is grateful to the Council of Scientific and Industrial Research for financial assistance. We are thankful to authorities of the Andhra University for providing facilities.

REFERENCES

- BENEDICT, J. E. (1897): A revision of the genus *Synidotea*. *Proc. U.S. nat. Mus.* 49: 389-404.
- CHILTON, C. (1924): Fauna of the Chilka Lake. Tanaidacea and Isopoda. *Mem. Indian Mus.* 5: 875-895.
- COLLINGE, W. E. (1917): Description of a new species of Isopoda of the genus *Synidotea* Harger, from the Gulf of Mannar. *Rec. Indian Mus.* 13: 1-3.
- JOSHI, U. N. & BAL, D. V. (1959): Some of the littoral species of Bombay isopods with detailed description of two new species. *J. Univ. Bombay* 25 (5B): 57-67.
- PILLAI, N. K. (1954): A preliminary note on the Tanaidacea and Isopoda of Travancore. *Bull. Cent. Res. Inst. Univ. Travancore* 3: 1-21.
- (1963): South Indian marine isopods. *J. Univ. Bombay* 31: 110-112.

DESCRIPTIONS OF TWO NEW SPECIES OF *TETRASTICHUS* HALIDAY (HYMENOPTERA: EULOPHIDAE) FROM INDIA<sup>1</sup>

S. ADAM SHAFEE, ANIS FATMA<sup>2</sup>  
AND PREM KISHORE<sup>3</sup>  
(With five text-figures)

*Tetrastichus agarwali* sp. nov. and *Tetrastichus delhiensis* sp. nov., parasites of *Atherigona soccata* (Rondani) are described and illustrated. The new species are compared with their closely allied species. Types are deposited in Zoological Museum, Aligarh Muslim University, Aligarh, India.

<sup>1</sup> Accepted May 1982.

<sup>2</sup> Department of Zoology, Aligarh Muslim University, Aligarh, India.

<sup>3</sup> Division of Entomology, Indian Agricultural Research Institute, New Delhi, India.

*Tetrastichus agarwali* sp. nov.  
(Figs. 1-3)

FEMALE

Head dark except region below antennal in-